
First-Time Mothers' Selection of Infant Supine Sleep Positioning

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ABSTRACT

The incidence of Sudden Infant Death Syndrome (SIDS) has decreased dramatically since the inception of the "Back to Sleep" campaign initiated by the American Academy of Pediatrics in 1992. However, that decrease has leveled off and many new parents cease to follow the recommendation to place their infants in the supine position for sleep between 1 and 3 months of age, the peak age for the incidence of SIDS. Shortened hospital stays for new mothers and the overwhelming amount of required patient teaching dictate the need to find the best method of instruction. The purpose of this study was to determine if a one-on-one teaching intervention improved the effectiveness of patient education and led to an increase in the desired behavior of placing the infant to sleep in the supine position. A quantitative experimental approach was used to examine the difference in compliance of supine infant positioning. Participants were drawn from a convenience sample of 61 primiparous women between the ages of 18 and 35 years with random assignment to either the experimental or control group. Compared to mothers in the control group, mothers in the experimental group demonstrated greater compliance in selecting supine sleep position in the first week home from the hospital and on the day of follow-up 6 weeks later. However, no difference in "usual position" was reported at 6 weeks and for the night previous to follow-up.



Visit the National Institute of Child Health and Human Development's Web site (www.nichd.nih.gov/sids/sids.cfm) for more information on the "Back to Sleep" campaign. The site also provides links to additional material and publications on the importance of placing babies on their backs to sleep.



The "Back to Sleep" campaign should also be accompanied by recommendations for reducing the time infants lean on the backs of their heads when they are awake. See "SIDS Prevention and Flat Heads" at www.drgreene.com/21_1633.html

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INTRODUCTION

The incidence of Sudden Infant Death Syndrome (SIDS) has decreased dramatically since the inception of the "Back To Sleep" campaign initiated by the American Academy of Pediatrics (AAP) in 1992 (Kattwinkel, Brooks, Keenan, & Malloy, 2000). However, many new parents cease to follow the recommendation to place their infants in the supine

position for sleep between 1 and 3 months of age, the peak age for incidence of SIDS (Brenner et al., 1998).

Myriad studies have examined factors associated with SIDS, and prone sleeping position continues to be one of the strongest (Brenner et al., 1998; Hauck et al., 2002; Hauck et al., 2003, Kattwinkel et al., 2000). Shortened hospital stays after delivery result

in less time for discharge teaching, and frazzled new mothers fail to retain the multiple instructions given them (Lockridge, 1997). This may include the important instruction on infant sleep position.

A paucity of research supports one of our greatest health professional obligations, that of patient education. New mothers are ushered out of the hospital with a shopping bag of commercial samples and coupons, but may lack or fail to take in personalized information that could save their infants' lives.

THEORETICAL FRAMEWORK

Jean Watson's (1979, 1988, 1994) theory of human caring was selected as the conceptual framework for the current study. The most pertinent carative factors (Watson, 1994) were sensitivity to self and others, helping-trusting human care relationships, a creative problem-solving caring process, transpersonal teaching-learning, and a supportive environment. Watson's emphasis on supportive relationships, couched in caring, and transpersonal teaching-learning between nurse and patient provided a clear framework for investigating the potential efficacy of a one-on-one teaching intervention that had the potential to prevent SIDS.

RESEARCH QUESTIONS

The study focused on the following research questions:

1. Does a one-on-one, focused teaching intervention for a new mother increase selection of infant supine sleep positioning in both the first week home from the hospital and 6 to 7 weeks after the teaching?
2. What factors guide a first-time mother in selecting infant sleep position?

REVIEW OF THE LITERATURE

Sudden Infant Death Syndrome (SIDS) is the leading cause of infant mortality after the neonatal period (Guyer, MacDorman, Martin, Peters, & Strobino, 1998). More than a two-fold increased risk for SIDS is associated with being placed for the last sleep in the prone position (Hauck et al., 2002). Caregiver noncompliance with sleep position recommendations by 6 weeks of age has been shown to be a key problem (Brenner et al., 1998; Kattwinkel et al., 2000; Lockridge, 1997; Peeke, Hershberger, Kuehn, & Levett, 1999). Specif-

Brenner and colleagues (1998) identified that mothers chose sleep positions based on the perception that infants slept better or were more comfortable.

ically, Brenner and colleagues (1998) identified that mothers chose sleep positions based on the perception that infants slept better or were more comfortable. More recently, a survey of households with infants less than 8 months of age identified fear of vomiting and choking as a maternal concern that affected choice of sleep position (Willinger, Ko, Hoffman, Kessler, & Corwin, 2000). Additionally, persistent concerns about the safety of supine positioning for sleep contribute to prone sleeping prevalence rates that remain over 10% (Hunt et al., 2003). Educational interventions that target these misconceptions are clearly important, but efforts are needed to address the unique circumstances surrounding the immediate postpartum period.

Aslanian and Brickell (1980) identified critical incidents and transitions that serve as triggers for learning. The birth of her first child represents a significant transition in a woman's life and, thus, can serve as such a trigger. Furthermore, Hayes and Flannery (2000) reported, "Women learn best in environments that promote mutual openness and an ethic of care, cooperation, and collaboration" (p. 125). Women particularly tend to thrive on the connectedness of relationships and affiliations when making decisions (Gilligan, 1982).

Nurses are placed in a position of trust by their patients (Lotzkar & Bottorf, 2001). Using that relationship as a springboard for caring, instructional intervention can enhance success in patient education (Sanford & Lamb, 1997).

Perinatal nurses and educators are often able to establish an intimate relationship with new mothers. Consequently, they are in a unique position to provide instruction about infant safety and preventative measures. However, new-parent discharge instructions, as they are given in a postpartum hospital setting, are often harried and haphazard (Lockridge, 1997). Strodtman (1984) recognized the problem of ineffective, spur-of-the-moment patient teaching almost 20 years ago.

Perinatal nurses do not consistently abide by the recommendations for sleep position and fail to model correct behavior. Peeke and colleagues (1999) surveyed and observed 103 nurses and reported that, while 97% were aware of AAP

guidelines, only 67% agreed with them and, more disturbingly, only 29% of hospitalized infants were placed in the supine position to sleep.

Brenner and colleagues (1998) discovered that, of mothers who witnessed nurses placing their infants prone while in the hospital, 93% voiced intent to do the same. In contrast, the appropriate instructions of the neonatal nurse increased the likelihood of the mother placing her infant in the supine position (Willinger et al., 2000). Hauck and colleagues (2002) found that 94% of parents or infant caregivers who recalled getting advice on infant sleep position stated they followed it. One-on-one education from a professional, targeted to a specific intervention, can result in improved patient outcomes (Schlatter & Ferrans, 1998; Swain & Macklin, 2001).

METHODS

The current study used a longitudinal, quantitative, experimental design. Data collection occurred in a rural, western, mountain community hospital that experiences approximately 1,200 births, annually.

Participants and Sample

Data collection occurred between October 2002 and February 2003. From a convenience sample of primiparous women, a total of 61 women were randomly assigned—29 in the control group and 32 in the experimental group. Participants in the experimental group received a targeted educational intervention. The demographics of age and education are summarized in Table 1. Variables of ethnicity, marital status, attendance at childbirth classes, number of prenatal visits, and presence of a support person in the home are compared in Table 2. Despite randomization, women enrolled in the experimental group tended to be older ($t = 2.393$, $p = .020$) and more predominantly Caucasian.

TABLE 1
Comparison of Age and Education for Overall Sample

Parameter	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Mode</i>	<i>t</i>	<i>p</i>
<i>Age</i>					2.393	.020*
Experimental	32	24.91	5.738	19		
Control	29	21.72	4.495	18		
<i>Education</i>					.904	.370
Experimental	32	13.22	2.075			
Control	29	12.76	1.883			

* $p < .05$

TABLE 2
Comparison of Demographic Characteristics of Overall Sample

Parameter	Experimental		Control		χ^2	<i>p</i>
	<i>n</i>	%	<i>n</i>	%		
<i>Ethnicity</i>						
Caucasian	30	93.8	20	69.0		
Hispanic	1	3.1	6	20.7		
Asian	1	3.1	—	—		
African American	—	—	3	10.3		
<i>Marital Status</i>					4.274	.118*
Married	18	56.2	10	34.4		
Single	13	40.6	19	65.5		
Divorced	1	3.1	—	—		
<i>Childbirth Class</i>					1.291	.256
Yes	19	59.3	13	44.8		
No	13	40.6	16	55.1		
<i>Prenatal Visits</i>						
Less than 10	4	12.5	1	3.5		
More than 10	28	87.5	28	96.5		
<i>Living with Support Person (Significant Other or Parents)</i>						
Yes	30	93.7	26	89.6		
No	2	6.2	3	10.3		

* $p < .05$

Protection of Human Subjects

Approval was sought and granted from the institutional review board of the affiliated university and hospital setting. All of the mothers signed informed consent before data collection.

Inclusion and Exclusion Criteria

Eligible participants were newly delivered primiparas between 18 and 35 years of age with English as their primary spoken language. Mothers whose infants were in Level II Nursery, requiring more than the usual newborn care, were excluded. Women personally acquainted with the researcher were also excluded to minimize bias.

Procedures

The researcher, a registered nurse certified in maternal-newborn nursing and with 12 years of obstetrical nursing experience, administered the teaching intervention after the mother's initial postpartum recovery period. The definition of SIDS was presented in lay terms. While emphasizing that the cause of SIDS is unknown, factors associated with SIDS were reviewed, emphasizing infant sleep position. The researcher demonstrated swaddling and positioning the mother's own infant

in a supine position with suggestions of how to maintain the position while the infant sleeps. Also reviewed were recommendations of the AAP on sleep environment, such as no covers above the infant's waist and no objects (pillows, toys, stuffed animals, etc.) in crib or bassinet (Kattwinkel et al., 2000). Mothers were encouraged to inform all of their infant's caregivers of these sleep guidelines. Supervised tummy time while the baby was awake was encouraged for developmental reasons (Kattwinkel et al., 2000). This differed from the usual care, where SIDS may or may not have been specifically addressed and correct infant positioning was rarely demonstrated directly to the mother. An additional difference, as stated earlier, is that most newborn teaching takes place immediately prior to discharge, with little emphasis on any issues other than feeding, bathing, recognizing the ill child, and knowing general safety factors. Usual care included teaching by a licensed practical nurse or registered nurse to the individual or within a group postpartum class. The decision of who taught what content in which format depended solely on staffing issues or the preference of the individuals working on any given day, not on patient need. Thus, information on SIDS for this group varied and could not be depended upon to be systematic or thorough.

Measures

Demographic data were gathered directly from the mother. Follow-up contact occurred 6 to 7 weeks after the teaching intervention. The mother was questioned as to her infant's sleep position during the first week home from the hospital, at the time of the follow-up interview, during the previous night, and for the present day's nap. All answers were coded as either supine or nonsupine. The researcher read from a list of questions and recorded answers as they were given. Lastly, the mother was asked what influenced her decision on how to lay her infant down to sleep for both the first week and for the present time. Her responses were matched against a list of nine possible choices, including the advice of the nursery nurse, physician, mother, mother-in-law, researcher (applicable only to the experimental group), and/or childbirth instructor. Other possibilities included infant preference, "I don't know," or "other." Only the primary researcher performed the interventions and phone interviews to ensure consistency.

Simple frequencies were run on demographic data, responses to questions on choice of sleep po-

sition, and specific reasons given for the decisions. Independent *t*-tests compared the two groups in terms of age and education. A chi-square test was used to analyze positioning data. A *p* value of 0.05 was used as the level of significance.

RESULTS

Every study participant was contacted for follow-up. Maternal responses to the questions asked at follow-up were analyzed by chi-square test. The results are presented in Table 3.

Research Question 1

Does a one-on-one, focused teaching intervention for a new mother increase selection of infant supine sleep positioning in both the first week home from the hospital and 6 to 7 weeks after the teaching?

When contacted 6 to 7 weeks postpartum, mothers in the experimental group reported choosing supine position more often than mothers in the control group during the first week after discharge ($\chi^2 = 4.516$; $p = .034$). However, 6 weeks after the intervention, responses were mixed. In regard to the question of usual infant sleep position at the present time, no significant difference occurred between the two groups ($\chi^2 = 1.186$; $p = .276$). When asked in what position the infant was laid to sleep the night previous to follow-up, no significant difference was evident ($\chi^2 = .287$; $p = .592$). The nonsignificant trend was for more control infants to be supine

TABLE 3
Comparison of Choice of Infant Sleep Position in the First Week, Currently, Last Night, and Today

Variable	Experimental		Control		χ^2	<i>p</i>
	<i>n</i>	%	<i>n</i>	%		
<i>First Week</i>					4.516	.034*
Supine	29	90.6	20	68.9		
Nonsupine	3	9.3	9	31.0		
<i>Currently</i>					1.186	.276
Supine	24	75.0	18	62.0		
Nonsupine	8	25.0	11	37.9		
<i>Last Night</i>					.287	.592
Supine	23	71.8	19	65.5		
Nonsupine	9	28.1	10	34.4		
<i>Today's Nap</i>					4.824	.028*
Supine	26	81.2	16	55.1		
Nonsupine	6	18.7	13	44.8		

**p* < .05

and for both groups to move toward nonsupine sleep at night. However, the final question—on sleep position for naptime the day of follow-up—showed that, when compared to the control group, the experimental group reported an increased selection of the supine position ($\chi^2 = 4.824$; $p = .028$).

Research Question 2

What factors guide a first-time mother in selecting infant sleep position?

The final two questions for all participants related to their reasons for choice of sleep position in the first week home and at the time of the telephone follow-up call. The researcher was cited as an influencing factor for 14 respondents (43.7%) in the experimental group in the first week after hospital discharge. By 6 weeks after discharge, 10 women (31.2%) continued to be influenced by the researcher's intervention to position their infant in the supine position (see Table 4).

In discussing the first week home from the hospital, 11 mothers (34.3%) in the experimental group and six (20.6%) in the control group cited the hospital staff nurse as an influence in deciding how to position their infant. At 6 weeks, the finding of reported nursing influence changed in the experimental group ($n = 5$, 15.6%) and remained the same in the control group ($n = 6$, 20.6%). Interestingly, mothers in the experimental group reported greater influence from the usual-care teaching provided by hospital nurses than did control group respondents ($\chi^2 = 6.472$, $p = .011$).

Only 11 women overall (18%) reported advice from a physician as a guiding factor in their choice of infant sleep position in the first week. By the time of follow-up, just three mothers (4.9%) mentioned the influence of a physician.

Initially, only five mothers (8.2%) in the overall sample were influenced by infant preference. By 6 weeks of age, that number increased six-fold to 30 (49.1%). At the time of follow-up, seven mothers (21.8%) in the experimental group cited infant preference as the reason for changing from supine to nonsupine positioning. In the control group, two women (6.8%) switched from supine to nonsupine positioning for this reason.

Keeping in mind that just slightly more than half (52.2%) of the overall sample attended childbirth classes, five participants (8.1%) claimed this as an influential factor. Just two mothers, one from each group, stated "I don't know" when asked for an influencing factor.

Overall, 26 respondents (42.6%) reported "other" influences. With only two exceptions, all of these responses were reading materials, specifically magazines. A total of 31.2% of experimental group respondents reported being motivated by reading material, while 24.1% of the control group were influenced by reading material ($\chi^2 = 3.348$, $p = .067$).

DISCUSSION

Compared to the control group, women who received the teaching intervention indicated a greater incidence in choosing supine positioning for infant sleep during the first week home from the hospital and for the infant's nap on the day of the follow-up

TABLE 4
Reported Influences on Infant Sleep Position*

	Experimental Group 1 Week ($n = 32$)		Control Group 1 Week ($n = 29$)		Experimental Group 6–7 Weeks Follow-up ($n = 32$)		Control Group 6–7 Weeks Follow-up ($n = 29$)	
	n	%	n	%	n	%	n	%
Researcher	14	43.7	n/a	n/a	10	31.2	n/a	n/a
Hospital Nurse	11	34.3	6	20.6	5	15.6	6	20.6
Physician	7	21.8	4	13.7	2	6.2	1	3.4
Infant Preference	1	3.1	4	13.7	13	40.6	17	58.6
Reading Material	12	37.5	16	55.1	10	31.2	7	24.1
Grandmothers	0	0	0	0	0	0	0	0
Childbirth Education for $n = 31^{**}$	2	6.2	3	10.3	2	6.2	1	3.4

*Numbers do not total 100% because mothers did not have the same influences and could name multiple influences.

**Only 52.2% of the overall sample attended prenatal childbirth education classes.

telephone call (6 weeks). No difference occurred in supine positioning between the groups for the night before follow-up (6 weeks) and “usually” at the time of follow-up (6 weeks).

The results of this study confirmed other investigators’ findings that mothers continue to choose placing their infants in nonsupine positions despite recommendations from health-care providers. Although participants in the experimental group reported greater compliance than those in the control group during the first week after the intervention, recency could account for this. The researcher’s counsel was fresh in the minds of the mothers who received the teaching intervention. Additionally, childbirth is the type of “critical incident” that Aslanian and Brickell (1980) identified as a significant factor triggering learning. The stress and excitement of childbirth would have been fresh in the first week home from the hospital, perhaps accounting for a heightened desire to “follow the rules” and abide by nursing discharge instructions.

Yet, 6 weeks later, no difference was evident between groups in compliance “usually” and the previous night. This finding is similar to the findings of other researchers (Brenner et al., 1998; Kattwinkel et al., 2000; Lockridge, 1997; Peeke et al., 1999).

The puzzling question is why the same mothers who admitted noncompliance “usually” and the night previous to follow-up reported compliance for the day of the researcher’s phone call. Desire to please the researcher is a possibility, but why this would be true for only the first and last question is perplexing.

Another consideration is that, if the mother thought her infant slept better in the nonsupine position, she may have chosen this for nighttime sleep in hopes of a less interrupted sleep for herself. On the other hand, for “today’s nap,” she may have chosen to comply with the nurse’s recommendation to place the infant supine because the mother herself was not trying to sleep.

Regarding whose advice guided maternal decision-making on infant sleep position, the hospital nurse and researcher were heavily cited, more so than physician, grandmother, or childbirth class instructor. However, by 6 weeks, infant preference won out. Influence of a grandmother, particularly if she lived with the new mother, was identified by Brenner and colleagues (1998) as a factor associated with prone sleep position. However, women in this study did not report that grandmothers influenced their choice of infant sleep position.

If the mother thought her infant slept better in the nonsupine position, she may have chosen this for nighttime sleep in hopes of a less interrupted sleep for herself.

In accordance with other studies on this topic, new mothers were heavily influenced by what they thought their newborn preferred (Brenner et al., 1998; Willinger et al., 2000). From this, one could logically propose that because new mothers are short on sleep, and if they think their babies prefer one position over another and will sleep longer, this can be a deciding factor.

LIMITATIONS OF THE STUDY

The sample size of 61 participants was expected to be adequate to estimate the population mean with reasonable accuracy (Munro, 2001; Vaughan, 1998). However, in this study, despite random assignment, the mean age was different between groups. Also, a disproportionate number of ethnic minorities existed in the control group. Further, the percent of participants who were married, living with support, and attending childbirth is in the direction of greater for the experimental group. Although there were not enough numbers in each cell to calculate an accurate chi-square for each variable, the lack of similarity raises questions about the findings. An existing questionnaire that met the needs of this particular study could not be found. Thus, the research devised new questions with unknown validity.

RESEARCH IMPLICATIONS

Generalizability of this study to other maternal populations is limited due to the relatively small sample size. However, larger investigations revealed similar results and did not contradict any findings of this study. The local population where the study was conducted represents substantially different demographics from other rural and urban areas. Further investigation with a larger sample size and a more diverse population could potentially resolve some of the differences. Additional qualitative data need to be gathered on what influences mothers in their choice of infant sleep position. Since maternal perception of infant preference is such a strong factor in choice of sleep position, research is needed to determine how health professionals can best promote strategies to meet both the mother’s need for rest and the infant’s safe sleep position, as

The frequency of when “booster” doses of teaching are useful has not been addressed here or by previous researchers.

well as what really does promote infant sleep and comfort.

CLINICAL IMPLICATIONS

Mothers in the experimental group reported being influenced by their encounter with the researcher. After 6 weeks, almost half (43.7%) of the mothers who received one-on-one teaching remembered it enough to mention it. Also, almost one-third of this group (31.2%) was still correctly positioning their baby, citing researcher influence. A recent study among Northern Plains Indians (Iyasu et al., 2002) revealed that infants whose mothers reported being visited by a public health nurse and receiving one-on-one education on maternal and infant health either before or after birth had a significantly lower risk for SIDS. Considering that mothers in the experimental group cited a significantly greater influence from usual-care strategies (hospital nurses’ routine teaching), it is exciting to realize that a one-on-one teaching intervention can work synergistically with routine nursing instructions and handouts to reinforce postpartum education. The initial power of the transpersonal relationship for teaching-learning as described by Watson (1994) is borne out in this research. However, the frequency of when “booster” doses of teaching are useful has not been addressed here or by previous researchers.

CONCLUSIONS

Clearly, nurses, childbirth educators, and physicians have the potential to affect maternal decision-making for choice of infant sleep position. The moments spent instructing and demonstrating infant care are crucial, regardless of the multiple demands on the care provider’s time. In an era where every hospital task is scrutinized and staffing decisions are made on time-study matrixes, the time allotment for patient teaching by the registered nurse must be preserved and guarded carefully.

Similar intervention studies on the teaching of infant sleep position by childbirth educators and pediatric care providers are needed. Pediatric care providers are in a position to give booster education to the information covered in the hospital. Many childbirth educators hold a class reunion after their clients’ infants are born, which offers an excellent

opportunity to revisit the topic of sleep position. Additionally, new-parenting classes can address the issue. It is important to recognize that a one-time education strategy alone may not provide adequate staying power.

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